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CLAIM SET AS AMENDED

1. (Currently Amended) An automation system for controlling and monitoring devices in a network of devices comprising:

- a plurality of devices to be controlled, each ~~device~~ of the devices comprising:

- a radio frequency receiver for receiving signals,

- a radio frequency transmitter for transmitting the signals,

- a memory for storing data representing a device identifier identifying the device and storing other data,

- a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the memory,

a controller comprising:

- a radio frequency transmitter for transmitting the signals,

- a radio frequency receiver for receiving the signals,

- ~~a~~ another memory for storing data representing a controller identifier identifying the controller and storing data representing a device table holding the device identifiers of the devices controlled by the controller,

- a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the another memory,

wherein the processing unit of the controller comprises means for generating a first type signal for instructing a first device to discover ~~other~~ others of the devices within its range,

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said first type signal comprising the device identifier of the first device as a destination

identifier and at least some of the device identifiers from the device table, and

wherein the processing unit of any first device of the plurality of devices comprises means

for:

-     upon receiving a first type signal from the controller with its identifier as the

destination identifier, generating second type signals for each of the device identifier

identifiers in the first signal, each of the second type signals signal comprising a the

device identifier from the first type signal as the destination identifier and the device

identifier of the first device as a source identifier,

-     upon receiving the second type signal from another of the devices with its identifier as

the destination identifier, acknowledging the reception of a the second type signal by

generating a third type acknowledgement signal to said another of the devices, the

third type signal comprising the source identifier of the received second type signal as

the destination identifier and the destination identifier of the received second type

signal as the source identifier, and

-     upon receiving a third type signal from another of the devices with its identifier as the

destination identifier, storing data representing the source identifier of the third type

signal in its memory.

2. (Currently Amended) An automation system according to claim 1, wherein the

memory of the controller is further adapted to store data representing a routing table, wherein

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the processing unit of any first device of the plurality of devices further comprise means for generating a fourth type signal comprising the identifier of the controller as the destination identifier, stored data representing the source identifiers of any received third type signals, and the device identifier of the first device as a the source identifier, and wherein the processing unit of the controller further comprises means for receiving fourth type signals from the devices to be controlled and forming the routing table indicating for each one of the plurality of devices, other others of the devices which the each one device can successfully transmit the signals to and receive the signals from.

3. (Currently Amended) An automation system according to claim 1, wherein the memory of the controller is further adapted to store data representing a most used entry point list and wherein the processing unit of the controller further comprises means for forming and storing a the most used entry point list in the memory by registering the number of successfully and failed transmitted signals from the controller to each device of the devices in the network, said most used entry point list indicating the device identifiers of the devices with which the controller regularly communicates.

4.(Currently Amended) An automation system according to claim 3, wherein the most used entry point list comprises the device identifiers for one or more of the devices in the network and a counter related to each of the device identifier identifiers in the list, said counter giving an indication of the number of successful transmissions to the related device.

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5. (Currently Amended) An automation system according to claim 4, wherein the means for forming the most used entry point list is adapted to, in case of a transmission to a the device in the most used entry point list, increase the counter related to the device if the transmission is successful and to decrease the counter related to the device if the transmission fails, and wherein the means for forming the most used entry point list is further adapted to, in case of a transmission to a the device which is not in the most used entry point list, include the device in the most used entry point list if the transmission is successful.

6. (Currently Amended) An automation system according to claim 2, wherein the memory of the controller is further adapted to store data representing a preferred repeater list and wherein the processing unit of the controller further comprises a routine for analyzing the routing table to form a preferred repeater list indicating one or more of the devices which together can route a the signal from any device of the devices in the routing table to any other device of the devices in the routing table and store said preferred repeater list in the memory of the controller.

7. (Currently Amended) An automation system according to claim 1, wherein the means for generating the first type signal is adapted to generate the first type signal to the first device in response to a predetermined action.

8. (Currently Amended) An automation system according to claim 7, wherein the processing unit of the controller is further adapted to add another of the devices to the device

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table, and wherein the addition of the first device to the device table is a the predetermined

action.

9. (Currently Amended) An automation system according to claim 1, wherein each

device of the devices controlled by the controller is comprised in of one or more groups of

the devices to be collectively controlled, each group of the groups comprising at least one

device of the devices, wherein the processing unit of the controller further comprises means

for adding another of the devices to and removing the another of the devices from a the one

or more of the groups group, and wherein the means for adding and removing the devices

to/from the groups is adapted to virtually mark a the device in the memory of the first

processing unit when it is removed from a the group.

10. (Currently Amended) An automation system according to claim 7 [and]or 9,

wherein the addition of the first device to a the group is a predetermined action if the first

device is virtually marked.

11. (Currently Amended) An automation system according to claim 1, wherein the

first type signal comprises all of the device identifiers from the device table, except the

device identifier of the first device.

12. (Currently Amended) An automation system according to claim 1, wherein each

of the plurality of devices further comprise means for providing an output to, or receiving an

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input from, an appliance operationally connected to the device, wherein the processing unit

of the controller further comprises means for generating a fifth type signal comprising at

least one of the destination ~~identifier~~ identifiers corresponding to ~~a~~ the device identifiers of ~~a~~

the destination device, information related to the operation of the destination device or the

appliance connected to the destination device, and repeater identifiers corresponding to one

or more signal repeating devices, and wherein one or more of the plurality of devices are

further adapted to act as the signal repeating devices in that the processing units of each of

said one or more of the devices comprise means for, upon reception of a fifth type signal,

processing said information in its processing unit if the at least one destination identifier

corresponds to the device identifier of the device, and means for, upon reception of a fifth

type signal, transmitting another fifth type ~~sixth~~ signal holding the at least one destination

identifier and said information if one of the one or more repeater identifiers corresponds to

the device identifier of the device.

13. (Currently Amended) An automation system according to claim 12, wherein all of

the devices are adapted to act as the signal repeating devices.

14. (Currently Amended) An automation system according to claim 2 [and]or 12,

wherein the processing unit of the controller comprises means for identifying in the routing

table device identifiers of devices for repeating a first type signal having ~~a~~ the predetermined

destination identifier, and to include said device identifiers as repeater identifiers in the first

type signal.

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15. (Currently Amended) A method for determining a network topology in an automation system network for controlling and monitoring devices comprising:

- a plurality of devices to be controlled, each ~~device~~ of the devices comprising a memory for storing data representing a device identifier identifying the device and storing data representing a routing line indicating ~~other~~ others of the devices which the device can successfully transmit signals to and receive the signals from, and a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the memory,

- a controller comprising a another memory storing data representing a controller identifier identifying the controller and storing data representing a device table for holding the device identifiers of the devices controlled by the controller, and a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the another memory,

said method comprising the steps of:

transmitting a first type signal from the controller for instructing a first device to discover ~~other~~ others of the devices within its range, said signal comprising the device identifiers from the device table,

receiving the first type signal at the first device and transmitting the second type signals from the first device addressed to the devices in the device table,

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transmitting, from each of the other devices that receives one of the second type signals addressed to it, a third type signal acknowledging the reception of the received second type signal from each device that received a second signal addressed to it, and

receiving any third type signal signals at the first device and storing data representing the device identifiers of the devices which transmitted the received third type signal signals in the routing line in the memory of the first device.

16. (Currently Amended) A method according to claim 15, wherein the memory of the controller is further adapted to store data representing a routing table indicating for each one of the plurality of devices, other others of the devices which the each one device can successfully transmit the signals to and receive the signals from, the method further comprising the steps of:

transmitting a fourth type signal from the first device to the controller, the fourth type signal holding the routing line, and

receiving the fourth type signal at the controller and storing the routing line in the routing table of the memory of the controller.

17. (Currently Amended) A method according to claim 15, wherein the memory of the controller is further adapted to store data representing a most used entry point list indicating the device identifiers of the devices with which the controller regularly communicates and a counter related to each of the device identifier identifiers in the list, said

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counter giving an indication of the number of successful transmissions to the related device, the method further comprises the steps of registering the number of successfully and failed transmitted signals from the controller to each of the devices ~~device~~ in the network, and after a transmission to ~~a device~~ one of the devices in ~~the~~ a most used entry point list, increasing the counter related to the device if the transmission is successful, and decreasing the counter related to the device if the transmission fails.

18. (Currently Amended) A method according to claim 17, further comprising the steps of, in case of a transmission to ~~a device~~ another of the devices which is not in the most used entry point list, including the another of the devices ~~device~~ in the most used entry point list if the transmission is successful.

19. (Currently Amended) A method according to claim 16, wherein the memory of the controller is further adapted to store data representing a preferred repeater list, the method further comprising the steps of analyzing the routing table to identify one or more of the devices which together can route ~~a signal~~ one of the signals from any of the devices ~~device~~ in the routing table to any others of the ~~other device~~ devices in the routing table, and storing data representing the device identifiers of these one or more of the devices in the preferred repeater list.

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20. (Currently Amended) A method according to claim 15, wherein the controller is triggered to transmit the first type signal for instructing the first device to discover ~~other~~ others of the devices within its range by a predetermined action.

21. (Currently Amended) A method according to claim 20, wherein the processing unit of the controller is further adapted to add the others of the devices to the device table, and wherein the addition of the first device to the device table is ~~a~~ the predetermined action.

22. (Currently Amended) A method according to claim 20, wherein each ~~device~~ of the devices controlled by the controller is comprised ~~in~~ of one or more groups of the devices, each of the groups ~~group~~ comprising at least one of the devices ~~device~~, and wherein the processing unit of the controller further comprises means for adding the at least one of the devices to and removing the at least one of the devices from ~~a group~~ the groups, wherein ~~a device~~ the at least one of the devices is virtually marked when it is removed from ~~a group~~ one of the groups, and wherein the addition of ~~a device~~ the at least one of the devices to ~~a group~~ one of the groups is ~~a~~ the predetermined action if the added the at least one of the devices ~~device~~ is virtually marked.

23. (Currently Amended) A controller for controlling devices in an automation system, said controller comprising:

-       a radio frequency transmitter for transmitting signals,

-       a radio frequency receiver for receiving the signals,

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- a memory for storing data representing a controller identifier identifying the controller and storing data representing a device table holding device identifiers of the devices controlled by the controller,

- a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the memory,

wherein the processing unit of the controller comprises means for generating a first type signal for instructing a first device to discover ~~other~~ other of the devices within its range, said first type signal comprising the device identifier of the first device as a destination identifier, a list of the device identifiers from the device table, and instructions to the first device to generate and transmit second type signals to the devices from said list for determining which of the devices from said list can be reached from the first device.

24. (Currently Amended) A device to be controlled by a controller in an automation system comprising a plurality of devices, each of said ~~device~~ devices comprising:

- a radio frequency receiver for receiving signals,

- a radio frequency transmitter for transmitting the signals,

- a memory for storing data representing a device identifier identifying the device and storing other data,

- a processing unit for administering the reception and transmission of the signals and being adapted to read data from and store data in the memory,

wherein the processing unit of the device comprises means for:

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- upon receiving a [first] signal of a first type comprising its identifier as a destination identifier, a list of the device identifiers, and instructions to the device to generate and transmit signals of a second type to the devices from said list for determining which of the devices from said list can be reached from the device, generating second type signals for each of the device identifier identifiers in the list, each second type signal comprising a the device identifier from the list as the destination identifier and the device identifier of the device as a source identifier,

- upon receiving a second type signal from another of the devices with its identifier as the destination identifier, acknowledging the reception of a the second type signal by generating a third type acknowledgement signal to said another of the devices, the third type signal comprising the source identifier of the received second type signal as the destination identifier and the destination identifier of the received second type signal as the source identifier, and

- upon receiving a third type signal from another of the devices with its identifier as the destination identifier, storing data representing the source identifier of the third type signal in its memory.

25. (Currently Amended) A method for routing signals in an automation system network for controlling and monitoring devices comprising:

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-    a plurality of devices to be controlled, each <u>of the devices</u> ~~device~~ comprising a memory storing data representing a device identifier identifying the device and a processing unit for administering the reception and transmission of signals,

-    a controller comprising a memory storing data representing a controller identifier identifying the controller, storing data representing a routing table indicating for each <u>one</u> of the plurality of devices, ~~other~~ <u>others of the</u> devices which <u>the</u> each <u>one</u> device can successfully transmit <u>the</u> signals to and receive <u>the</u> signals from, and storing data representing a most used entry point list being an ordered list indicating the device identifiers of the number, N, of <u>the</u> devices that have the highest transmission success counter corresponding to the number of successful transmission from the controller to a <u>the</u> device minus the number of failed transmissions from the controller to the device, and a processing unit for administering the reception and transmission of <u>the</u> signals and being adapted to read data from and store data in the memory,

said method comprising the steps of:

A. transmitting a first signal from the controller to a specified <u>one of the devices</u> ~~device~~ at least once, said signal comprising the identifier of the specified device as a destination identifier,

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B. if said first signal is received by the specified device, transmitting an acknowledgement

signal from the specified device to the controller,

C. if ~~no~~ the acknowledgement signal is not received by the controller, then choosing the first

device from ~~the~~ a most used entry point list as a first repeating device,

D. determining a route to the specified device in the routing table, the route using one or

more repeating devices, the first of which is the first repeating device,

E. transmitting a second routed signal from the controller at least once, said signal

comprising the identifier of the specified device as ~~a~~ the destination identifier and the

identifiers of the one or more repeating devices from the route determined in step D as

repeater identifiers,

F. transmitting a routed acknowledgement signal from the specified device to the controller

upon reception of the routed second signal, and

G. as long as ~~no~~ the routed acknowledgement signal is not received by the controller from

the specified device, then repeating steps D, E, and F for N-1 times using the second,

third,...Nth device from the most used entry point list as ~~a~~ the first repeating device.

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26.(Currently Amended) A method according to claim 25, wherein the memory of the controller further stores data representing a preferred repeater list indicating one or more <u>of</u> <u>the</u> devices which together can route ~~a~~ <u>the</u> signal from any <u>of the devices</u> ~~device~~ in the routing table to any ~~other device~~ <u>others of the devices</u> in the routing table, and wherein the method further comprises the steps of:

H. if ~~no~~ <u>the</u> routed acknowledgement signal of the Nth second routed signal is <u>not</u> received by the controller from the specified device, then choosing the first device from the preferred repeater list that is not in the most used entry point list as ~~a~~ <u>the</u> first repeating device,

I. determining a route to the specified device in the routing table, the route using one or more repeating devices, the first of which is the first repeating device,

J. transmitting a second routed signal from the controller, said signal comprising the identifier of the specified device as ~~a~~ <u>the</u> destination identifier and the identifiers of the one or more repeating devices from the route determined in step H as <u>the</u> repeater identifiers,

K. transmitting ~~a~~ <u>the</u> routed acknowledgement signal from the specified device to the controller upon reception of the routed second signal, and

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L. as long as ~~no~~ the routed acknowledgement signal is not received by the controller from the

specified device, then repeating steps H, I, and J for each device in the preferred repeater list

using the corresponding device from the preferred repeater list as a first repeating device.

27. (Currently Amended) A method according to claim 25, wherein the processing

units of each of the plurality of devices are further adapted to provide an output to, or receive

an input from, an appliance operationally connected to the device, the method further

comprising the steps of:

transmitting a third signal from the controller, the third signal comprising at least one

destination identifier corresponding to the identifier of ~~a~~ the destination device or destination

controllers, information related to the operation of ~~a device~~ one of the devices or an

appliance connected to the one of the devices ~~a device~~, and one or more repeater identifiers

corresponding to device identifiers of one or more of the signal repeating devices,

receiving the third signal at one of said plurality of devices,

if the at least one of the destination ~~identifier~~ identifiers corresponds to the device identifier

of the receiving device, then processing said information in the processing unit of the device,

and

if one of the one or more of the repeater identifiers ~~correspond~~ corresponds to the device

identifier of the receiving device, then transmitting a fourth signal holding said at least one

destination identifier and said information.

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28. (Currently Amended) A method according to claim 27, wherein the third signal is transmitted by the controller, the at least one destination identifier comprised in the third signal is a the device identifier, and wherein the information comprised in the third signal comprises instructions to a processing unit of the destination device to provide an output to, or receive an input from, the appliance connected to the destination device.

29. (Currently Amended) A method according to claim 27, wherein the third signal is transmitted by one of the devices a device, wherein the at least one of the destination identifier identifiers comprised in of the third signal is a controller identifier, and wherein the information held by the third signal is related to a state or a reading of the device transmitting the third signal.

30.(Currently Amended) A method according to claims 27, further comprising the step of, upon receiving a the third or a fourth signal at a device one of the devices or a the controller, generate and transmit a first acknowledgement signal having the identifier of the device or the controller transmitting the third or the fourth signal as the destination identifier.

31. (Currently Amended) A method according to claim 30, wherein the first acknowledgement signal comprises a the destination identifier and one or more of the repeater identifiers, the method further comprising the steps of receiving said first acknowledgement signal at a one of the devices device and if one of the one or more repeater

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identifiers correspond to the device identifier of the receiving device, then transmitting a

second acknowledgement signal holding said destination identifier.